

SECTION 4

NONROAD MOBILE SOURCES

4.1 Introduction

Nonroad mobile sources are often included as nonpoint sources because of the number and size of the sources. Nonroad mobile sources include, but are not limited to, railroad locomotives, aircraft, commercial marine vessels, farm equipment, recreational boating, and lawn and garden equipment. Emissions estimates for these sources are based on source activity variables that are surrogate indicators of emissions.

The nonroad mobile emissions inventory was provided by STI. The inventory was developed NONROAD 2004, the EPA's approved emissions factor model for most off-road mobile sources. NONROAD 2004 was used to produce emission estimates at the parish level. EPA guidance documents were also consulted for emissions estimation methods for locomotives and commercial marine vessels (U.S. Environmental Protection Agency, 1999c, 1998b, 2000, 2003b, 1999a, 1997, 1992). Bottom-up activity data were gathered for recreational boats, locomotives, and commercial marine vessels (see Appendix F for the STI Report).

4.2 EPA Nonroad Mobile Model

Nonroad mobile emissions result from the combustion, evaporation, and spillage of fuel in equipment and vehicles designed primarily for off-road use; therefore, the composition of fuel and the ambient temperature for the period of time to be modeled must be defined. Other modeling parameters (Reid Vapor Pressure (RVP), sulfur, and oxygen content) depend on local fuel composition. There are technical documents available that demonstrate the nonroad engine growth estimates; calculation of age distribution (growth and scrappage); basic evaporative and crankcase emission rates; exhaust emission factors, nonroad engine population estimates, average life, annual activity and load factor values; seasonal and monthly activity allocation fractions and hydrocarbon conversion factors at the website: www.epa.gov/omswww/nonrdmdl.htm. The emissions summary for nonroad mobile emissions is presented at the end of this section in Table 4.3.

4.2-1 Aircraft

Aircraft emissions are divided into four categories: commercial, general, air taxi, and military. Activity data, as well as methodology for calculating emissions, have been well defined for commercial aircraft. Military, air taxi, and general aircraft emissions have been determined by an alternative, fleet-average procedure outlined in Procedures for Emission Inventory Preparation, Volume IV: Mobile Sources (see Reference Table, #8).

Emissions from commercial aircraft can be calculated using engine data in the Federal Aviation Administration (FAA) Engine Emission Database (FAEED). FAEED is a computerized calculation procedure, which simplifies data management that was developed by the FAA with support from EPA. Engine information from commercial airports in the FAEED computer program along with input landing/takeoff cycles (LTOs) per aircraft type can be used to calculate emissions.

4.2-2 Railroad Locomotive

Emission estimates were generated for Class I line haul, Class II and III line haul, and yard (or switching) locomotives using fuel consumption and traffic density. The activity data was obtained from individual railroads, federal agencies, and other sources.

4.2-3 Commercial Marine Vessels

The emission estimates in this section were provided by STI. STI generated emission estimates for commercial marine vessels operating in commercially active waterways, including inland river systems and the Gulf Intracoastal Waterway (GIWW). Parish level emissions were designated as either “in-port” or “underway”.

4.2-4 Recreational Boats

STI used NONROAD 2004 to calculate emissions for recreational boats. NONROAD 2004 produces parish-level emission estimates for several categories of recreational boats using national equipment populations which are disaggregated to the parish level on the basis of the total water surface area in a given parish. NONROAD 2004 also relies on broad assumptions

related to boating activity (such as annual hours of operation, engine load factors, and temporal variations in activity). These assumptions vary by equipment type but not by geographic area. The activity data files used by the NONROAD 2004 model were updated with information gathered through a bottom-up survey of representative groups of recreational boat owners. The survey was designed to gather data on vessel characteristics, hours of use, fuel consumption, engine loads, and temporal and geographic usage patterns. The data assembled through this survey were then incorporated in the NONROAD 2004 model, along with state specific data on temperatures and fuel characteristics.

4.3 Emissions Summary

The following table summarizes emissions from the nonroad mobile sources for the Baton Rouge Area. Appendix G includes specific information on nonroad mobile sources for the SCCs presented by STI.

Table 4.3: 2002 Nonroad Mobile Source Emissions Summary for the Baton Rouge Area

Class	SCC	Description	VOC		NO _x		CO	
			TPY	TPD	TPY	TPD	TPY	TPD
Off-Highway Vehicles Gasoline 2-Stroke	2260001010	Recreational Equip.						
		Motorcycles: Off-Road	261.05	0.72	0.68	0.00	241.97	0.66
	2260001030	Recreational Equip.						
		All Terrain Vehicles	260.64	0.71	0.68	0.00	242.49	0.66
	2260001060	Recreational Equip.						
		Specialty Vehicles/Carts	1.16	0.00	0.25	0.00	32.71	0.09
	2260002006	Construction & Mining						
		Tampers/Rammers	27.62	0.08	0.41	0.00	78.29	0.21
	2260002009	Construction & Mining						
		Plate Compactors	1.74	0.00	0.00	0.00	3.89	0.01
	2260002021	Construction & Mining						
		Paving Equipment	2.04	0.01	0.00	0.00	4.55	0.01
	2260002027	Construction & Mining						
		Signal Boards/Light Plants	0.01	0.00	0.00	0.00	0.03	0.00
	2260002039	Construction & Mining						
		Concrete/Industrial Saws	77.58	0.21	0.96	0.00	214.84	0.59
	2260002054	Construction & Mining						
		Crushing/Processing Equip.	0.42	0.00	0.00	0.00	0.94	0.00
	2260003030	Industrial Equipment						
		Sweepers/Scrubbers	0.42	0.00	0.00	0.00	0.94	0.00
	2260003040	Industrial Equipment						
		General Industrial Equip.	0.03	0.00	0.00	0.00	0.08	0.00
	2260004015	Lawn & Garden Equip.						
		Rotary Tillers ≤ 6HP (Res.)	3.33	0.01	0.01	0.00	6.11	0.02
	2260004016	Lawn & Garden Equip.						
		Rotary Tillers ≤ 6HP (Com.)	10.37	0.03	0.03	0.00	20.75	0.06
	2260004020	Lawn & Garden Equip.						
		Chain Saws ≤ 6HP (Res.)	57.85	0.16	0.17	0.00	112.03	0.31

Off-Highway Vehicles Gasoline 4-Stroke	2260004021	Lawn & Garden Equip. Chain Saws ≤ 6HP (Com.)	175.71	0.48	1.78	0.00	419.13	1.15
	2260004025	Lawn & Garden Equip.	65.21	0.18	0.20	0.00	126.78	0.35
		Trimmers/Edgers (Res.)						
	2260004026	Lawn & Garden Equip.	100.22	0.27	0.44	0.00	218.96	0.60
		Trimmers/Edgers (Com.)						
	2260004030	Lawn & Garden Equip.	40.66	0.11	0.11	0.00	78.88	0.22
		Leafblowers/Vacuums (Res.)						
	2260004031	Lawn & Garden Equip.	91.24	0.25	0.68	0.00	222.89	0.61
		Leafblowers/Vacuums (Com.)						
	2260004071	Lawn & Garden Equip.	0.03	0.00	0.00	0.00	0.08	0.00
		Turf Equipment (Com.)						
	2260005035	Agricultural Equipment Sprayers	0.29	0.00	0.00	0.00	0.63	0.00
		Agricultural Equipment						
	2260005050	Agricultural Equipment Hydro-power Units	0.05	0.00	0.00	0.00	0.09	0.00
		Hydro-power Units						
	2260006005	Commercial Equipment Generator Sets	5.35	0.01	0.02	0.00	12.45	0.03
		Commercial Equipment						
	2260006010	Pumps	44.82	0.12	0.20	0.00	104.04	0.29
		Commercial Equipment						
	2260006015	Air Compressors	0.01	0.00	0.00	0.00	0.03	0.00
		Logging Equipment						
	2260007005	Chain Saws ≥ 6HP	21.33	0.06	0.29	0.00	62.60	0.17
		Recreational Equip.						
	2265001010	Motorcycles: Off-Road	8.04	0.02	0.92	0.00	106.66	0.29
		Recreational Equip.						
	2265001030	All Terrain Vehicles	65.26	0.18	7.88	0.02	1002.37	2.75
		Recreational Equip.						
	2265001050	Golf Carts	1.93	0.01	0.61	0.00	127.25	0.35
		Recreational Equip.						
	2265001060	Recreational Equip.	1.16	0.00	0.21	0.00	33.52	0.09

	Specialty Vehicles/Carts						
	Construction & Mining						
2265002003	Pavers	1.57	0.00	0.71	0.00	65.64	0.18
	Construction & Mining						
2265002006	Tampers/Rammers	0.01	0.00	0.00	0.00	0.58	0.00
	Construction & Mining						
2265002009	Plate Compactors	5.86	0.02	0.86	0.00	124.15	0.34
	Construction & Mining						
2265002015	Rollers	2.54	0.01	1.22	0.00	130.76	0.36
	Construction & Mining						
2265002021	Paving Equipment	8.23	0.02	1.80	0.00	247.50	0.68
	Construction & Mining						
2265002024	Surfacing Equipment	3.12	0.01	0.73	0.00	109.64	0.30
	Construction & Mining						
2265002027	Signal Boards/Light Plants	0.21	0.00	0.03	0.00	6.31	0.02
	Construction & Mining						
2265002030	Trenches	6.39	0.02	2.14	0.01	207.47	0.57
	Construction & Mining						
2265002033	Bore/Drill Rigs	3.64	0.01	0.69	0.00	62.65	0.17
	Construction & Mining						
2265002039	Concrete/Industrial Saws	9.14	0.03	3.68	0.01	557.64	1.53
	Construction & Mining						
2265002042	Cement and Mortar Mixes	8.93	0.02	1.44	0.00	223.70	0.61
	Construction & Mining						
2265002045	Cranes	0.37	0.00	0.36	0.00	9.40	0.03
	Construction & Mining						
2265002054	Crushing/Processing Equip.	0.83	0.00	0.23	0.00	29.97	0.08
	Construction & Mining						
2265002057	Rough Terrain Forklifts	0.56	0.00	0.61	0.00	11.82	0.03
	Construction & Mining						
2265002060	Rubber Tire Loaders	1.32	0.00	1.52	0.00	25.99	0.07

2265002066	Construction & Mining		2.93	0.01	1.14	0.00	170.21	0.47
	Tractors/Loaders/Backhoes							
2265002072	Construction & Mining		2.27	0.01	1.63	0.00	73.42	0.20
	Skid Steer Loaders							
2265002078	Construction & Mining		1.21	0.00	0.23	0.00	33.84	0.09
	Dumpers/Tenders							
2265002081	Construction & Mining		0.50	0.00	0.53	0.00	9.18	0.03
	Other Construction Equip.							
2265003010	Industrial Equipment		3.12	0.01	2.57	0.01	81.53	0.22
	Aerial Lifts							
2265003020	Industrial Equipment		8.91	0.02	10.64	0.03	183.32	0.50
	Forklifts							
2265003030	Industrial Equipment		2.67	0.01	1.92	0.01	78.12	0.21
	Sweepers/Scrubbers							
226003040	Industrial Equipment		8.71	0.02	1.69	0.00	205.40	0.56
	General Industrial Equip.							
2265003050	Industrial Equipment		0.25	0.00	0.21	0.00	7.74	0.02
	Mat. Handling Equipment							
2265003060	Industrial Equipment		0.14	0.00	0.05	0.00	6.43	0.02
	AC/Refrigeration							
2265003070	Industrial Equipment		0.93	0.00	12.42	0.03	20.01	0.05
	Terminal Tractors							
2265004010	Lawn & Garden Equip.		104.01	0.28	6.57	0.02	1450.77	3.97
	Lawn Mowers (Res.)							
2265004011	Lawn & Garden Equip.		51.25	0.14	3.21	0.01	822.72	2.25
	Lawn Mowers (Com.)							
2265004015	Lawn & Garden Equip.		8.32	0.02	0.69	0.00	116.74	0.32
	Rotary Tillers ≤ 6hp (Res.)							
2265004016	Lawn & Garden Equip.		24.28	0.07	2.29	0.01	403.67	1.11
	Rotary Tillers ≤ 6HP (Com.)							
2265004025	Lawn & Garden Equip.		0.66	0.00	0.04	0.00	8.09	0.02

	Trimmers/Edgers (Res.)						
	Lawn & Garden Equip.						
2265004026	Trimmers/Edgers (Com.)	1.13	0.00	0.11	0.00	19.11	0.05
	Lawn & Garden Equip.						
2265004030	Leafblowers/Vacuums (Res.)	1.23	0.00	0.08	0.00	13.56	0.04
	Lawn & Garden Equip.						
2265004031	Leafblowers/Vacuums (Com.)	18.72	0.05	6.74	0.02	819.82	2.25
	Lawn & Garden Equip.						
	Rear Engine Riding						
2265004040	Mowers (Res.)	10.03	0.03	2.11	0.01	332.07	0.91
	Lawn & Garden Equip.						
	Rear Engine Riding						
2265004041	Mowers (Com.)	1.90	0.01	0.59	0.00	102.21	0.28
	Lawn & Garden Equip.						
2265004046	Front Mowers (Com.)	2.89	0.01	0.68	0.00	112.07	0.31
	Lawn & Garden Equip.						
2265004051	Shredders ≤ 6 hp (com.)	3.28	0.01	0.27	0.00	43.75	0.12
	Lawn & Garden Equip.						
2265004055	Lawn & Garden Tractors (Res.)	112.07	0.31	25.75	0.07	4568.92	12.52
	Lawn & Garden Equip.						
2265004056	Lawn & Garden Tractors (Com.)	24.59	0.07	7.49	0.02	1442.19	3.95
	Lawn & Garden Equip.						
	Chippers/Stump						
2265004066	Grinders (Com.)	4.29	0.01	2.74	0.01	182.28	0.50
	Lawn & Garden Equip.						
2265004071	Turf Equipment (Com.)	88.57	0.24	25.68	0.07	4459.28	12.22
	Lawn & Garden Equip.						
	Other Lawn & Garden						
2265004075	Equipment (Res.)	7.56	0.02	0.81	0.00	136.93	0.38
2265004076	Lawn & Garden Equip.	6.23	0.02	0.69	0.00	119.21	0.33
	Other Lawn & Garden						

	Equipment (Com.)							
	Agricultural Equipment							
2265005010	2-Wheel Tractors		0.05	0.00	0.01	0.00	2.34	0.01
2265005015	Agricultural Equipment							
	Agricultural Tractors		0.15	0.00	0.15	0.00	4.76	0.01
2265005020	Agricultural Equipment							
	Combines		0.00	0.00	0.00	0.00	0.02	0.00
2265005025	Agricultural Equipment							
	Balers		0.16	0.00	0.09	0.00	2.20	0.01
2265005030	Agricultural Equipment							
	Agricultural Mowers		0.05	0.00	0.00	0.00	1.82	0.00
2665005035	Agricultural Equipment							
	Sprayers		0.66	0.00	0.17	0.00	15.54	0.04
2265005040	Agricultural Equipment							
	Tillers ≥ 6 hp		1.26	0.00	0.16	0.00	37.43	0.10
2265005045	Agricultural Equipment							
	Swathers		0.23	0.00	0.16	0.00	3.49	0.01
2265005050	Agricultural Equipment							
	Hydro-power Units		0.33	0.00	0.08	0.00	13.95	0.04
2265005055	Agricultural Equipment							
	Other Agricultural Equip.		0.29	0.00	0.20	0.00	7.13	0.02
2265005060	Agricultural Equipment							
	Irrigation Sets		0.29	0.00	0.29	0.00	6.60	0.02
2265006005	Commercial Equipment							
	Generator Sets		119.91	0.33	24.69	0.07	4513.70	12.37
2265006010	Commercial Equipment							
	Pumps		38.11	0.10	8.95	0.02	1014.36	2.78
2265006015	Commercial Equipment							
	Air Compressors		16.34	0.04	6.22	0.02	497.41	1.36
2265006025	Commercial Equipment							
	Welders		23.58	0.06	10.61	0.03	1281.41	3.51

Liquid Petroleum Gas (LPG)	2265006030	Commercial Equipment	Pressure Washers	66.35	0.18	11.93	0.03	1954.21	5.35
	2265007010	Logging Equipment	Shredders ≥ 6 hp	5.90	0.02	0.89	0.00	137.15	0.38
			Logging Equipment						
			Forest Equipment						
	2265007015	Feller/Bunch/Skidder		0.08	0.00	0.01	0.00	1.70	0.00
	2265008005	Airport Ground Support Equipment							
		Equipment		0.15	0.00	0.11	0.00	3.97	0.01
	2265010010	Industrial Equipment							
		Oil Field Equipment		10.38	0.03	3.21	0.01	629.76	1.73
		Recreational Equip.							
	2267001060	Specialty Vehicles/Carts		0.03	0.00	0.08	0.00	0.33	0.00
	2267002003	Construction & Mining							
		Pavers		0.11	0.00	0.45	0.00	1.78	0.00
		Construction & Mining							
	2267002015	Rollers		0.20	0.00	0.75	0.00	3.00	0.01
	2267002021	Construction & Mining							
		Paving Equipment		0.03	0.00	0.11	0.00	0.47	0.00
		Construction & Mining							
	22670002024	Surfacing Equipment		0.02	0.00	0.08	0.00	0.30	0.00
	2267002030	Construction & Mining							
		Trenchers		0.37	0.00	1.36	0.00	5.44	0.01
		Construction & Mining							
	2267002033	Bore/Drill Rigs		0.11	0.00	0.45	0.00	1.79	0.00
	2267002039	Construction & Mining							
		Concrete/Industrial Saws		0.36	0.00	1.29	0.00	5.24	0.01
		Construction & Mining							
	2267002045	Cranes		0.13	0.00	0.49	0.00	1.93	0.01
	2267002054	Construction & Mining							
		Crushing/Processing Equip.		0.02	0.00	0.08	0.00	0.30	0.00

2267002057	Construction & Mining						
	Rough Terrain Forklifts	0.23	0.00	0.88	0.00	3.46	0.01
2267002060	Construction & Mining						
	Rubber Tire Loaders	0.58	0.00	2.15	0.01	7.30	0.02
2267002066	Construction & Mining						
	Tractors/Loaders/Backhoes	0.07	0.00	0.22	0.00	0.92	0.00
2267002072	Construction & Mining						
	Skid Steer Loaders	0.42	0.00	1.54	0.00	6.19	0.02
2267002081	Construction & Mining						
	Other Construction Equip.	0.19	0.00	0.72	0.00	2.85	0.01
2267003010	Industrial Equipment						
	Aerial Lifts	1.05	0.00	3.89	0.01	12.80	0.04
2267003020	Industrial Equipment						
	Forklifts	85.46	0.23	326.79	0.90	1397.75	3.83
2267003030	Industrial Equipment						
	Sweepers/Scrubbers	0.76	0.00	2.78	0.01	11.18	0.03
2267003040	Industrial Equipment						
	General Industrial Equip.	0.23	0.00	0.87	0.00	3.45	0.01
2267003050	Industrial Equipment						
	Mat. Handling Equipment	0.05	0.00	0.21	0.00	0.81	0.00
2267003070	Industrial Equipment						
	Terminal Tractors	0.49	0.00	1.73	0.00	6.99	0.02
2267004066	Lawn & Garden Equip.						
	Chippers/Stump Grinders (Com)	0.75	0.00	2.77	0.01	9.85	0.03
2267005050	Agricultural Equipment						
	Hydro-power Units	0.00	0.00	0.00	0.00	0.03	0.00
2267005055	Agricultural Equipment						
	Other Agricultural Equip.	0.00	0.00	0.00	0.00	0.01	0.00
2267005060	Agricultural Equipment						
	Irrigation Sets	0.00	0.00	0.00	0.00	0.01	0.00
2267006005	Commercial Equipment	3.19	0.01	12.79	0.04	37.49	0.10

Compressed Natural Gas (CNG)		Generator Sets						
		Commercial Equipment						
	2267006010	Pumps	0.79	0.00	3.81	0.01	9.69	0.03
		Commercial Equipment						
	2267006015	Air Compressors	0.96	0.00	4.62	0.01	10.50	0.03
		Commercial Equipment						
	2267006025	Welders	1.61	0.00	4.85	0.01	21.05	0.06
		Commercial Equipment						
	2267006030	Pressure Washers	0.02	0.00	0.07	0.00	0.30	0.00
		Airport Ground Support Equipment						
	2267008005	Equipment	0.00	0.00	0.15	0.00	0.61	0.00
		Construction & Mining						
	2268002081	Other Construction Equip.	0.00	0.00	0.03	0.00	0.11	0.00
		Industrial Equipment						
	2268003020	Forklifts	0.37	0.00	22.78	0.06	93.83	0.26
		Industrial Equipment						
	2268003030	Sweepers/Scrubbers	0.00	0.00	0.03	0.00	0.14	0.00
		Industrial Equipment						
	2268003040	General Industrial Equip.	0.00	0.00	0.01	0.00	0.07	0.00
		Industrial Equipment						
	2268003060	A/C Refrigeration	0.00	0.00	0.07	0.00	0.34	0.00
		Industrial Equipment						
	2668003070	Terminal Tractors	0.00	0.00	0.14	0.00	0.53	0.00
		Agricultural Equipment						
	2268005055	Other Agricultural Equip.	0.00	0.00	0.00	0.00	0.00	0.00
		Agricultural Equipment						
	2268005060	Irrigation Sets	0.00	0.00	0.34	0.00	1.39	0.00
		Commercial Equipment						
	2268006005	Generator Sets	0.06	0.00	5.42	0.01	13.12	0.04
		Commercial Equipment						
	2268006010	Pumps	0.00	0.00	0.26	0.00	0.71	0.00

Off-Highway Vehicle Diesel	2268006015	Commercial Equipment		0.00	0.00	0.38	0.00	1.06	0.00
		Air Compressors							
		Commercial Equipment							
	2268006020	Gas Compressors		0.20	0.00	12.81	0.04	55.55	0.15
		Industrial Equipment							
	2268010010	Oil Field Equipment		57.83	0.16	11.80	0.03	58.93	0.16
		Recreational Equip.							
	2270001060	Specialty Vehicles/Carts		0.32	0.00	0.91	0.00	1.28	0.00
		Construction & Mining							
	2270002003	Pavers		3.28	0.01	30.23	0.08	16.89	0.05
		Construction & Mining							
	2270002006	Tampers/Rammers		0.01	0.00	0.08	0.00	0.04	0.00
		Construction & Mining							
	2270002009	Plate Compactors		0.21	0.00	1.23	0.00	0.73	0.00
		Construction & Mining							
	2270002015	Rollers		9.38	0.03	77.08	0.21	44.37	0.12
		Construction & Mining							
	2270002018	Scrapers		6.98	0.02	88.67	0.24	41.58	0.11
		Construction & Mining							
	2270002021	Paving Equipment		0.61	0.00	5.60	0.02	0.61	0.00
		Construction & Mining							
	2270002024	Surfacing Equipment		0.43	0.00	3.83	0.01	2.55	0.01
		Construction & Mining							
	2270002027	Signal Boards/Light Plants		2.09	0.01	10.08	0.03	6.64	0.02
		Construction & Mining							
	2270002030	Trenchers		5.70	0.02	37.99	0.10	28.36	0.08
		Construction & Mining							
	2270002033	Bore/Drill Rigs		5.02	0.01	45.97	0.13	20.60	0.06
		Construction & Mining							
	2270002036	Excavators		23.56	0.06	325.25	0.89	115.89	0.32
		Construction & Mining							
	2270002039	Construction & Mining		0.46	0.00	2.76	0.01	2.37	0.01

	Concrete/Industrial Saws						
	Construction & Mining						
2270002042	Cement and Mortar Mixes	0.23	0.00	2.06	0.98	0.46	0.00
	Construction & Mining						
2270002045	Cranes	7.25	0.02	86.36	0.24	23.24	0.06
	Construction & Mining						
2270002048	Graders	6.60	0.02	78.32	0.21	26.28	0.07
	Construction & Mining						
2270002051	Off-Highway Trucks	22.11	0.06	298.58	0.82	122.00	0.33
	Construction & Mining						
2270002054	Crushing/Processing Equip.	1.48	0.00	15.58	0.04	6.08	0.02
	Construction & Mining						
2270002057	Rough Terrain Forklifts	12.96	0.04	102.00	0.28	66.82	0.18
	Construction & Mining						
2270002060	Rubber Tire Loaders	31.60	0.09	402.96	1.10	175.44	0.48
	Construction & Mining						
2270002066	Tractors/Loaders/Backhoes	54.21	0.15	246.03	0.67	237.03	0.65
	Construction & Mining						
2270002069	Crawler Tractor/Dozers	28.09	0.08	342.17	0.94	141.90	0.39
	Construction & Mining						
2270002072	Skid Steer Loaders	55.75	0.15	159.24	0.44	209.61	0.57
	Construction & Mining						
2270002075	Off-Highway Tractors	3.98	0.01	41.04	0.11	23.21	0.06
	Construction & Mining						
2270002078	Dumpers/Tenders	0.18	0.00	0.58	0.00	0.60	0.00
	Construction & Mining						
2270002081	Other Construction Equip.	3.92	0.01	39.57	0.11	22.80	0.06
	Industrial Equipment						
2270003010	Aerial Lifts	1.32	0.00	4.98	0.01	4.29	0.01
	Industrial Equipment						
2270003020	Forklifts	3.99	0.01	36.84	0.10	20.61	0.06

2270003030	Industrial Equipment						
	Sweepers/Scrubbers	2.02	0.01	20.18	0.06	7.03	0.02
2270003040	Industrial Equipment						
	General Industrial Equip.	2.31	0.01	22.94	0.06	8.14	0.02
2270003050	Industrial Equipment						
	Mat. Handling Equipment	0.29	0.00	1.51	0.00	0.91	0.00
2270003060	Industrial Equipment						
	AC/Refrigeration	9.56	0.03	83.11	0.23	41.94	0.11
2270003070	Industrial Equipment						
	Terminal Tractors	2.16	0.01	25.06	0.07	9.37	0.03
2270004031	Lawn & Garden Equip.						
	Leafblowers/Vacs. (Com.)	0.00	0.00	0.00	0.00	0.00	0.00
2270004046	Lawn & Garden Equip.						
	Front Mowers (Com.)	2.54	0.01	11.42	0.03	7.45	0.02
2270004056	Lawn & Garden Equip.						
	Lawn & Garden Tractors (Com.)	0.56	0.00	2.64	0.01	1.73	0.00
2270004066	Lawn & Garden Equip.						
	Chippers/Stump Grinders (Com)	2.50	0.01	17.41	0.05	2.50	0.01
2270004071	Lawn & Garden Equip.						
	Turf Equipment (Com.)	0.23	0.00	1.85	0.01	0.83	0.00
2270004076	Lawn & Garden Equip.						
	Other (Com.)	0.01	0.00	0.06	0.00	0.03	0.00
2270005010	Agricultural Equipment						
	2-Wheel Tractors	0.00	0.00	0.00	0.00	0.00	0.00
2270005015	Agricultural Equipment						
	Agricultural Tractors	16.68	0.05	124.83	0.34	71.64	0.20
2270005020	Agricultural Equipment						
	Combines	1.50	0.00	15.51	0.04	5.73	0.02
2270005025	Agricultural Equipment						
	Balers	0.01	0.00	0.06	0.00	0.05	0.00
2270005030	Agricultural Equipment	0.00	0.00	0.01	0.00	0.00	0.00

	Agricultural Mowers						
	Agricultural Equipment						
2270005035	Sprayers	0.28	0.00	1.05	0.00	0.76	0.00
	Agricultural Equipment						
2270005040	Tillers ≥ 6 hp	0.00	0.00	0.00	0.00	0.00	0.00
	Agricultural Equipment						
2270005045	Swathers	0.12	0.00	1.17	0.00	0.47	0.00
	Agricultural Equipment						
2270005050	Hydro-power Units	0.05	0.00	0.26	0.00	0.13	0.00
	Agricultural Equipment						
2270005055	Other Agricultural Equip.	0.41	0.00	2.94	0.01	1.75	0.00
	Agricultural Equipment						
2270005060	Irrigation Sets	0.22	0.00	1.80	0.00	0.73	0.00
	Commercial Equipment						
2270006005	Generator Sets	12.10	0.03	68.63	0.19	37.94	0.10
	Commercial Equipment						
2270006010	Pumps	2.59	0.01	16.97	0.05	9.83	0.03
	Commercial Equipment						
2270006015	Air Compressors	5.36	0.01	38.70	0.11	18.17	0.05
	Commercial Equipment						
2270006025	Welders	8.72	0.02	18.60	0.05	28.98	0.08
	Commercial Equipment						
2270006030	Pressure Washers	0.41	0.00	2.56	0.01	1.51	0.00
	Logging Equipment						
	Forest Equipment						
2270007015	Feller/Bunch/Skidder	4.04	0.01	48.44	0.13	15.18	0.04
	Airport Ground Support						
2270008005	Equipment	0.51	0.00	6.07	0.02	2.82	0.01
	Industrial Equipment						
2270010010	Oil Field Equipment	3.15	0.01	35.56	0.10	13.18	0.04
	Military Aircraft						
2275001000	Military Aircraft	0.99	0.00	0.11	0.00	20.48	0.06

Aircraft

	2275020000	Commercial Aircraft	8.43	0.02	46.74	0.13	54.32	0.15
	2275050000	General Aviation	2.69	0.01	0.45	0.00	84.73	0.23
	2275060000	Air Taxi	4.57	0.01	0.59	0.00	105.17	0.29
Commercial Marine Vessels	2280002100	Diesel Port Emissions	52.67	0.14	2087.41	5.72	374.08	1.02
	2280002200	Diesel	31.59	0.09	1494.99	4.10	285.41	0.78
		Underway Emissions						
		Residual						
	2280003100	Port Emissions	117.68	0.32	3268.02	8.95	363.12	0.99
	2280003200	Residual	16.86	0.05	590.65	1.62	52.08	0.14
		Underway Emissions						
		Gasoline 2-Stroke						
	2282005010	Outboard	2057.17	5.64	65.88	0.18	5573.33	15.27
	2282005015	Gasoline 2-Stroke Personal Water Craft	323.80	0.89	8.75	0.02	872.23	2.39
Pleasure Craft	2282010005	Gasoline 4-Stroke	105.55	0.29	59.37	0.16	1524.59	4.18
		Inboard/Stemdrive						
		Diesel						
	2282020005	Inboard/Stemdrive	1.68	0.00	41.21	0.11	6.48	0.02
	2282020010	Diesel Outboard	0.03	0.00	0.14	0.00	0.11	0.00
Railroad Equipment	2285002006	Diesel	46.43	0.13	884.50	2.42	123.10	0.34
		Line Haul Locomotives						
		Diesel						
	2285002010	Yard Locomotives	12.15	0.03	160.70	0.44	22.10	0.06
	2285002015	Diesel	1.20	0.00	6.89	0.02	5.91	0.02
		Railway Maintenance						
		Gasoline 4-Stroke						
	2285004015	Railway Maintenance	0.41	0.00	0.11	0.00	13.48	0.04
	2285006015	LPG	0.00	0.00	0.01	0.00	0.06	0.00
		Railway Maintenance						